

## Claims

- 2           1.       A method for identifying a compound which is capable of inhibiting a  
3 pathogen in a eukaryotic organism, said method comprising  
4           (a)       exposing at least two different eukaryotic organisms, at least one of  
5 said organisms being a non-rodent, to a single pathogen in the presence of at least one  
6 candidate compound; and  
7           (b)       identifying a compound that inhibits said pathogen in each of said  
8 eukaryotic organisms.

1           2.       The method of claim 1, wherein said pathogen is a bacterium.

1           3.       The method of claim 2, wherein said bacterium is *Pseudomonas*  
2 *aeruginosa*.

1           4.       The method of claim 2, wherein said bacterium is *Pseudomonas*  
2 *aeruginosa* UCBPP-PA14.

1           5.       The method of claim 1, wherein said eukaryotic organisms includes a  
2 vertebrate and a plant.

1           6.       The method of claim 1, wherein said eukaryotic organism includes a  
2 vertebrate and an invertebrate.

1           7.       The method of claim 1, wherein said eukaryotic organism includes a plant

1 and an invertebrate.

1 8. The method of claim 5 or claim 6, wherein said vertebrate is a mammal.

1 9. The method of claim 6 or claim 7, wherein said invertebrate is a nematode.

1 10. The method of claim 9, wherein said nematode is a member of the genus  
2 *Caenorhabditis*.

1 11. The method of claim 5 or claim 7, wherein said plant is a member of the  
2 genus *Arabidopsis*.

1 12. The method of claim 1, wherein each of said eukaryotic organisms is a  
2 plant.

1 13. The method of claim 1, wherein each of said eukaryotic organisms is a  
2 vertebrate.

1 14. The method of claim 1, wherein each of said eukaryotic organisms is an  
2 invertebrate.

1 15. The method of claim 14, wherein said invertebrate is an insect.

1 16. The method of claim 15, wherein said insect is a lepidopteran.

1 17. The method of claim 16, wherein said lepidopteran is *Galleria* or *Plutella*.

- 1 18. The method of claim 14, wherein said insect is a dipteran.
- 1 19. The method of claim 19, wherein said dipteran is *Drosophila*.
- 1 20. The method of claim 1, wherein said method utilizes the nematode fast  
2 killing assay.
- 1 21. The method of claim 20, wherein said nematode fast killing assay involves  
2 the use of a *C. elegans* having a P-glycoprotein mutation.
- 1 22. A method for identifying a compound which is capable of inhibiting a  
2 pathogen in a non-rodent eukaryotic host organism, comprising  
3 (a) exposing said a non-rodent eukaryotic host organism to a single pathogen in  
4 the presence of at least one candidate compound; and  
5 (b) identifying a compound that inhibits the pathogen in said eukaryotic host  
6 organism.
- 1 23. The method of claim 22, wherein said pathogen is a bacterium.
- 1 24. The method of claim 23, wherein said bacterium is *Pseudomonas*  
2 *aeruginosa* UCBPP-PA14.
- 1 25. The method of claim 22, wherein said non-rodent eukaryotic host  
2 organism is a nematode.
- 1 26. The method of claim 25, wherein said nematode is *Caenorhabditis*  
2 *elegans*.

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1 27. The method of ~~claim 25~~, wherein said non-rodent eukaryotic organism is a  
2 plant.

28. The method of ~~claim 27~~, wherein said plant is *Arabidopsis*.

1 29. The method of claim 22, wherein said method utilizes the nematode fast  
2 killing assay.

1 30. The method of claim 29, wherein said nematode fast killing assay involves  
2 the use of a *C. elegans* having a P-glycoprotein mutation.

1 31. A method for identifying a pathogenic virulence factor, comprising  
2 (a) identifying a pathogen which is capable of infecting at least two different  
3 eukaryotic organisms, at least one of said organisms being a non-rodent;  
4 (b) generating a mutant of said pathogen;  
5 (c) exposing each of said organisms to said mutated pathogen;  
6 (d) determining whether said mutated pathogen is capable of causing disease in  
7 each of said organisms, a reduction of disease in both of said organisms relative to that  
8 caused by said wild-type pathogen indicating a mutation in said pathogenic virulence factor;  
9 and  
10 (e) using said mutation as a marker for identifying said pathogenic virulence  
11 factor.

1 32. A method for mutating a pathogenic virulence factor, comprising  
2 (a) identifying a pathogen which is capable of infecting at least two different  
3 eukaryotic organisms, at least one of said organisms being a non-rodent;

- 1 (b) generating a mutant of said pathogen;
- 2 (c) exposing each of said organisms to said mutated pathogen; and
- 3 (d) determining whether said mutated pathogen is capable of causing disease in
- 4 each of said organisms, a reduction of disease in both of said organisms relative to that
- 5 caused by said wild-type pathogen indicating a mutation in said pathogenic virulence factor.

- 1 33. A method of reducing the virulence of a pathogen, comprising
- 2 (a) identifying a pathogen which is capable of infecting at least two different
- 3 eukaryotic organisms, at least one of said organisms being a non-rodent;
- 4 (b) generating a mutant of said pathogen;
- 5 (c) exposing each of said organisms to said mutated pathogen; and
- 6 (d) determining whether said mutated pathogen is capable of causing disease in
- 7 each of said organisms, a reduction of disease in both of said organisms relative to that
- 8 caused by said wild-type pathogen indicating a reduction in said pathogen virulence.

- 1 34. A method for identifying a pathogenic virulence factor, comprising
- 2 (a) selecting a pathogen which is capable of infecting an insect;
- 3 (b) generating a mutant of said pathogen;
- 4 (c) exposing said insect to said mutated pathogen; and
- 5 (d) determining whether said mutated pathogen is capable of causing
- 6 disease on said insect, a reduction of disease on said insect relative to that caused by said
- 7 wild-type pathogen indicating a mutation in said pathogenic virulence factor.

- 1 35. The method of claim 34, wherein identification of said mutation is used as a
- 2 marker for identifying said pathogenic virulence factor.

- 1 36. The method of claim 34, wherein said insect is a moth or a fly.

- 1           37.   The method of claim 34, wherein said pathogen is a bacterium.
- 1           38.   The method of claim 37, wherein said bacterium is a member of the genus  
2   *Pseudomonas*.
- 1           39.   The method of claim 34, wherein said pathogen is a fungus.
- 1           40.   The method of claim 39, wherein said fungus is a member of the genus  
2   *Fusarium*.
- 1           41.   The method of claim 34, further comprising calculating an LD<sub>50</sub> of a  
2   pathogen.
- 1           42.   The method of claim 34, further comprising testing said mutated pathogen  
2   in a mouse mortality assay.
- 1           43.   The method of claim 36, wherein said moth is *Galleria mellonella*.
- 1           44.   The method of claim 36, wherein said moth is *Plutella xylostella*.
- 1           45.   The method of claim 36, wherein said fly is *Drosophila melanogaster*.